BUREAU OF
Entomology and Plant Quarantine
RECEIVED
☆ JUN 4 1945 ☆
Forest Insect Laboratory,
BERKELEY, CALIF.

FILE No. 631.1
Refer to: Noted by:

UNITED STATES DEPARTMENT OF AGRICULTURE
BUREAU OF ENTOMOLOGY AND PLANT QUARANTINE

ANNUAL FOREST INSECT STATUS REPORT IDAHO AND MONTANA 1944

By James C. Evenden
Senior Entomologist
Division of Forest Insect Investigations

INTRODUCTION

An activity of the Coeur d'Alene Laboratory is the extension of an adequate service to all land managing agencies in the solution of their forest insect problems. During the past season an attempt was made to obtain current information concerning all dangerous or potentially dangerous insect situations and to report such conditions to the managing agency responsible. Our limited personnel did not permit us to meet this obligation in its entirety, but it is believed that the most serious situations were examined and reported upon.

This report of forest insect conditions within the Northern Rocky Mountain area is submitted each year to provide a brief depiction of existing conditions as indicated by available data. In compiling this statement all sources of available information have been used, with the Annual Ranger Reports again proving to be of invaluable assistance. Although all forest insect infestations may not be recorded, or descriptions of the different situations may not be entirely complete, it is believed that the most important situations are included, and that the descriptions are adequate for this manuscript.

Forest insects play an important role in all programs of forest protection. The importance of this role is not always appreciated until such time as the loss of merchantable timber assumes alarming proportions. Although it is often true that the annual loss may only be a fraction of a tree per acre, when spread over a period of years it is often far more serious than anticipated. In many of our mature white pine stands the loss of the merchantable trees comprises a large percent of the original volume. In some instances this loss has been of sufficient severity to make the marketing of the residual volume an economically questionable procedure. This is especially true in such temporary forest types as white pine, where losses of this tree species are replaced by less valuable woods. Successful forestry practices must provide for all environmental factors which contribute to the creation and natural transitions of forest stands. Forest insects are an important enemy of all forest trees, and the neglect of this problem can seriously impair the success of otherwise well planned forestry.

FOREST INSECT SITUATION

Mountain Pine Beetle in Western White Pine

This destructive forest enemy (Dendroctonus monticolae) continues to take an annual toll of merchantable white pine from the forests of the region. It is difficult to estimate what this loss has been but it is safe to say that 90,000 M.B.F. per annum would be a conservative figure.

During the past season it became quite apparent that there was a rather marked build up in the severity of the infestations of this insect in white pine. The future of this increase is difficult to forecast with any positive degree of accuracy, but it is feared that in many areas the destruction will reach a much higher level than during the past year. This position is based upon the character of the 1944 overwintering broods which last fall indicated a high attack potentials. As conditions peculiar to the present, practically prohibit the institution of artificial control on any large scale, it is earnestly hoped that fears in this connection will prove groundless.

On the Clearwater National Forest and lands protected by the Clearwater Timber Protective Association, there are infestations of this beetle which are more than just potentially serious. In the Deadhorse, Tepee, Washington, Osier-Deception, Scofield-Washington, and Orogrande Creek drainages are infestations, where the 1944 attack destroyed from .8 to as much as 2.4 percent of the total stand. On the Coeur d'Alene National Forest, serious conditions prevail in the areas around Yellow Dog where the past seasons loss varied from .6 (Yellow Dog Creek) to 1.7 percent (Yellow Dog River) of the total stand. A small spot infestation is present in Clinton Creek (Coeur d'Alene Forest) where on some 200 acres approximately 3 percent of the total volume was destroyed in 1944. On the Cabinet National Forest there is a potentially dangerous situation in the 12 Mile Creek drainage and a destructive outbreak is present in the Pete Creek area of the Kootenai National Forest.

It is recognized that there are no doubt other serious situations in white pine which should be included in this report. However it is believed that at least the most serious of these infestations have been mentioned.

Mountain Pine Beetle in Ponderosa Pine

Although no serious infestations are known to exist within the ponderosa pine forests of the region, a potentially dangerous situation has been reported from the Helena National Forest which may prove to be the mountain pine beetle. This situation will be examined by officers of the Coeur d'Alene Laboratory as early in the season as possible.

Mountain Pine Beetle in Lodgepole Pine

During the past season a serious epidemic of the mountain pine beetle was recorded in an area of lodgepole pine within the Caribou National Forest in south-eastern Idaho. During the past three years this insect has destroyed a large percent of the merchantable timber, contained in various sized compartments distributed throughout an area of some seven sections. A survey of this area showed approximately 20,000 merchantable trees as being attacked and killed during the 1944 season. An attempt is being made to control this situation through the salvage of infested trees as well as by direct control. In addition to this situation other infestations occur on the Cabinet, Gallatin, Cache, Lolo, and Targhee National Forests, and the Grand Teton National Park. Fortunately at this time none of these outbreaks are overly serious, although the serious potentials of such situations will not be overlooked.

There is a phase of mountain pine beetle damage to lodgepole pine in addition to the actual destruction of timber which becomes an important consideration. This consideration is the tangled mass of logs made by the fallen insect killed trees. This condition results in a materially increased fire hazard, and makes fire suppression an almost impossible task; it makes horseback travel through such areas impossible; and raises the cost of road, trail, and telephone maintenance to a real economic consideration.

Mountain Pine Beetle in White Bark Pine and Limber Pine

There are still some scattered infestations of this insect in both white bark pine and limber pine along the higher elevations of the Continental Divide, but these are not serious at this time.

Western Pine Beetle in Ponderosa Pine

Infestations of the western pine beetle (Dendroctonus brevicomis), which is the most destructive insect enemy of ponderosa pine, were recorded on the Kootenai National Forest of Montana and the Payette National Forest of central Idaho. The outbreak on the Kootenai was for the most part confined to the lower bole of large trees which had been top killed by the Oregon engraver beetle. These insects (Ips oregoni) had developed to an epidemic population in slash and cull logs associated with logging operations. The infested trees were salvaged for lumber by the J. Neils Lumber Company and it is hoped that this action will eliminate subsequent damage. On the Payette Forest in Idaho, there is a rather general infestation of this insect distributed over a large area which has been responsible for the destruction of large volumes of timber. A survey will be made of this situation during the coming season to determine the actual status of the situation.

Infestations of less serious proportions were reported from the Bitterroot, and the Lewis and Clark National Forests which will be kept

under observation. Infestation of this insect in the ponderosa pine stands of the Thompson River drainage, Montana, are at a low level.

Douglas Fir Beetle in Douglas Fir

This destructive beetle (Dendroctonus pseudotsugae) continues to take a heavy toll of timber throughout the Douglas Fir forests of the Northern Rocky Mountain Region. Although infestations of varying severity are to be found in all areas of mature timber, potentially serious infestations now exist on the East Fork of the Bitterroot River, and in the Glacier National Park. A questionable situation has been reported from the Lolo forest which if possible will be examined during the coming field season. Infestations on the Flathead, Gallatin, Payette, Sawtooth, and Targhee National Forests are considered as decreasing in severity.

During past years losses of Douglas Fir resulting from infestations of these beetles have not been considered as of economic importance as a result of existing market conditions. With the present demand for woods of less value than white pine, which is hoped can at least be partially retained following the close of the war, the destruction of such timber now comprises an economic loss to the timber resources of the region. Future infestations of this beetle will need receive more consideration than has been given in the past.

Oregon Engraver Beetle in Ponderosa Pine

Outbreaks of this beetle (Ips oregoni) continues to occur in all ponderosa pine stands where there are abnormal accumulations of slash. Destructive populations of this insect follow nearly all sporadic cutting of ponderosa pine as well as the close of logging operations, and often destroy patches of reproduction, poles, and tops of mature trees. It is fortunate that such outbreaks are not of long duration and usually by the time the situation is observed through the discolored foliage of the attacked trees, the danger of further damage is over. Perhaps the most serious condition associated with the development of these destructive Ips populations is the possibility of more persistant infestations of the western pine beetle developing in the base of top killed trees. During the past season rather serious situations existed on the Kootenai and Payette National Forests, which were directly associated with logging debris. Slash created in the late fall and early winter is not so susceptible to attack but it is realized that logging operations cannot be confined entirely to this period of the year.

Spruce Budworm Infestations

Outbreaks of the spruce budworm which have been present on the Helena and Gallatin National Forests for the past few years still occur in

an epidemic status. It was hoped that the low winter temperatures of 1942 - 1943 which were so destructive to tree growth throughout these forests, would be beneficial in reducing the severity of these outbreaks. However this did not prove to be true and during the past season, especially on the Helena, the defoliation was more severe and covered larger areas than during previous years. The future of these outbreaks is difficult to foresee, however it is quite apparent that if they continue in their present severity there will be a heavy loss of Douglas Fir. At the present time the forests on large areas have been defoliated for two or more seasons, and many trees have already been injured beyond recovery. Outbreaks of the Douglas Fir beetle often develop to serious proportions in Douglas Fir trees previously weakened from budworm defoliation.

In addition to these two situations, budworm outbreaks have been reported from the Flathead (Big Prairie and Spotted Bear), the Lewis and Clark (White Sulphur Springs), the Beaverhead (Wise River), and the Lolo (Nine Mile) National Forests. The full seriousness of these infestations is not known at this time but an effort will be made to obtain more detailed information during the coming season.

Spruce Budworm in Hemlock

An infestation of the spruce budworm was recorded on an area of hemlock on the Coeur d'Alene National Forest (Flat Creek) in 1944. Working in association with this insect was an associated infestation of a saw fly, which has been temporarily determined as the Fir Sawfly (Neodiprion abietis). Although the same biological factors of control no doubt influenced the occurrence of these two insect outbreaks, it is apparent that in this instance the spruce budworm is the most destructive of the two species. Severe defoliation of the one season destroyed the tip of most hemlock trees in the more heavily defoliated areas. Although the future of this outbreak is yet to be seen, it is apparent that if it continues in its present severity for another season or more, a severe loss of timber will follow.

Larch Sawfly (Nematus erichsonii)

Although some ten years ago an infestation of this insect started on the Flathead National Forest, and spread throughout the larch forests of the region, it seems to have decreased materially in severity during the past two seasons. Light infestations of this insect were reported from the Cabinet and Lolo National Forests with a light defoliation being recorded on a number of other areas. During the period of this outbreak trees on many areas were completely defoliated for several seasons. As there are no records of trees having been killed it is quite apparent that this tree species is highly resistant to injury from defoliation.

Hemlock Looper (Ellopia fiscellaria lugubrosa)

Some eight years ago there were some 57 areas of severe hemlock looper infestation recorded from North Idaho and Western Montana. These areas of infestation, which varied from a few acres to several thousand, were for the most part along ridge tops conforming to boundaries of true fir forest types. In addition to these reported areas of severe injury, there were light attacks scattered throughout the entire ranger districts. It is also realized that there could have been other areas of severe defoliation which were not recorded. The total acreage of the defoliated areas is not known although it would be several hundred thousand acres. Although this outbreak only lasted for three years with two seasons of severe injury, at least 60% of the defoliated trees died as a direct result of defoliation. There were no great timber values involved, other than water shed protection, however the increased fire hazard which the dead trees had caused, is a matter of no small concern.

Red Belt

During the winter of 1942 - 1943 extreme low temperatures, preceded by day time temperatures sufficiently warm to start plant activity in forest tree foliage, resulted in a severe, so called, "winter injury" to forest trees of all species in the vicinity of Bozeman and Helena, Montana. Although winter injury or "Red Belt" is not an uncommon occurrence, the damage associated with this situation was the most severe the writer has ever recorded. An examination in 1943 indicated that in areas of severe injury, which were quite spotty and variable in their location, a large percent of the trees would die as a direct result of this injury. It is true that the temperatures which were apparently responsible were not abnormal for the state of Montana, but their occurrence at a time when the cold hardiness of the foliage had been disturbed by activity temperatures, was no doubt responsible for the damage.

In some areas the injury was confined entirely to buds with no foliage damage. Such injury was evidenced by the lack of new growth during the 1943 season. This was not serious as Douglas Fir trees meet this type of injury through the production of adventitious buds which the following season form at the end of twigs in a rosette of new growth buds. In a year or two all evidence of this injury is passed.

It has been feared that bark beetles might attack trees weakened from this cause and that destructive outbreaks would develop which would subsequently destroy healthy, as well as injured trees. Although this possibility is fully recognized we have no instances of its occurrence.

Unknown Injury to Douglas Fir Saplings

For the past three years an injury to the foliage of Douglas Fir trees of Christmas tree size has been reported from the Plains Ranger District, Cabinet National Forest. The injury renders them unmerchantable for Christmas trees. An examination of this area will be made during the coming season in an effort to determine the causual agency.

Artificial Control

Although there were a number of situations throughout the region where the institution of artificial control would have been desirable, the non-availability of labor prevented such action. It is hoped that for the safety of our mature timber stands that this condition will not be of long duration.

On the Kootenai National Forest a small localized outbreak of the mountain pine beetle in white pine, which originated from a severe blow down, was treated in May and June 1944. This project was quite successful with a 90% reduction in the severity of the outbreak being obtained. The few trees which were attacked in 1944 will be treated this spring.

A fairly large control project was instituted in the fall of 1944, against the severe outbreak of the mountain pine beetle within the lodgepole pine stands of the Caribou National Forest which has been previously mentioned. In addition to the actual treatment of infested trees, an attempt was made to salvage the merchantable size trees for mining timbers. As a large percent of the mature trees had already been destroyed, at the time this outbreak was discovered it was necessary that effective control be obtained this season. The success of this effort will not be known until after the 1945 attacks are over.

Forest Insect Surveys

The first and most important phase in preventing unwarranted losses of merchantable timber from insect attack, is an adequate and permanent program of forest insect detection surveys. Before an effective program of insect control can be instituted for the protection of timber resources, it is essential that the location, extent or area, and the seriousness of all infestations be known. It is also essential that infestations be recognized in their early stages, before they become destructive epidemics, if artificial control is to be fully effective and economical. To obtain data which will permit such an adequate and efficient planning of control, detection surveys must be extended at necessary intervals to all timbered areas regardless of the assumed status of insect conditions within them. Unless these surveys are made, control measures will, for the most part, be directed against insect outbreaks, which have been brought to the attention of the responsible agency through an excessive destruction of valuable

timber. Combatting insect epidemics is an expensive and laborious procedure, for not only are there many more trees to treat, but during the development of the outbreak large volumes of timber are destroyed. The occurrence of severe epidemics of destructive bark beetles often leaves a residual stand of such low value that the expense of control is often questioned.

Our present survey program is but little more than an attempt to examine those areas where from past records we are aware of potentially dangerous situations, or where abnormal forest conditions have been reported to us. This is an unsatisfactory condition which has already been realized in the severe insect outbreaks that have developed to epidemic proportions without previous warning. It is hoped that with a return to more normal forestry practices, it will become possible for data to be made available to all land managing agencies which will provide for a properly planned program of control.

It is hoped that as our timbered resources are placed under more intensive management the occurrence of destructive bark beetle losses can be minimized through the growing of more vigorous timber stands. However, as long as there are mature or decadent timber stands there will be bark beetle epidemics with an economic need for the institution of direct control. If present plans of sustained yield forest management are to be fully successful, losses from bark beetle outbreaks comparable to those that have occurred in the past cannot be endured. The solution to the problem of preventing such losses is the growing of thrifty, vigorous timber stands; an early detection of potential outbreaks, and the prompt institution of direct control when and where needed. Like all forest problems the answer is simple, but exacting.